



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/928,112	08/10/2001	Thomas C. Prentice	17549-109	7441

30623 7590 03/27/2003

MINTZ, LEVIN, COHN, FERRIS, GLOVSKY
AND POPEO, P.C.
ONE FINANCIAL CENTER
BOSTON, MA 02111

EXAMINER

KOCH, GEORGE R

ART UNIT	PAPER NUMBER
----------	--------------

1734

8

DATE MAILED: 03/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/928,112

Applicant(s)

PRENTICE ET AL.

Examiner

George R. Koch III

Art Unit

1734

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13, 22-25 and 30-36 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13, 22-25, and 30-36 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Misnumbered claims 26-32 been renumbered 30-36.

Election/Restrictions

2. Applicant's election without traverse of group I, claims 1-13, 22-25 in Paper No. 7 is acknowledged. Furthermore, newly presented claims 30-36 are included in group I.

Specification

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: "APPARATUS FOR CALIBRATING A DISPENSING SYSTEM".

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

Art Unit: 1734

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-13, 25, 30 and 33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. Claim 1 recites the limitation "a calibration routine" in line 13. It is unclear how this calibration routine differs from the calibration routine of line 8. It appears that "the calibration routine" was intended. Subsequent claims 1-13 do not correct this indefiniteness.

7. Claim 8 recites the limitation "a quantity of material" in line 2. It is unclear how this quantity differs from the quantity of material of claim 1. It appears that "the quantity of material" was intended. Subsequent claims 9-12 do not correct this indefiniteness.

8. Claim 8 recites the limitation "a calibration routine" in line 2. It is unclear how this calibration routine differs from the calibration routine of claim 1. It appears that "the calibration routine" was intended.

9. Claim 10 recites the limitation "a calibration routine" in line 2. It is unclear how this calibration routine differs from the calibration routine of claim 1, and 8. It appears that "the calibration routine" was intended.

10. Claim 12 recites the limitation "the pump" in line 2. There is insufficient antecedent basis for this limitation in the claim. This is the first recitation of "the pump", and it is suggested that this phrase be amended to "a pump". Furthermore, this pump is

not connected or linked to any element of the claimed apparatus. It appears that the pump is a specific form of the metering device.

Claim Objections

11. Regarding all of the claims, it is noted that phraseology of referring to the material which is dispensed changes across the claims. It is unclear whether the various references to material, material dispensed, dispensed material, the weight of material released, etc, refer to different materials or are the same material. For example, in claim 1, lines 3-4, reference is made to "a quantity of material dispensed". Subsequently, in claim 8, "a quantity of material dispensed" is referred to, which appears to be the same as the amount of claim 1 (see rejections based on lack of antecedency above). Similarly, claim 4 refers to "an amount of material", and claim 6 refers to "an amount of dispensed material", and these have been interpreted as different from the recitation of "a quantity of material dispensed" in claim 1. However, claim 10 refers to "the material dispensed". Similar phraseology "drift" occurs in the other claims. It is recommended that applicant review the terminology selected to ensure proper antecedent basis.

12. Claims 25, and 30 are objected to because of the following informalities:

13. Claim 25 recites the limitation "the weight of the material dispensed" in line 2. This is the first recitation of "the weight of the material dispensed", and it is suggested that this phrase be amended to "a weight of the material dispensed".

Art Unit: 1734

14. Claim 30 recites the limitation "the amount of the material dispensed" in line 1.

This is the first recitation of "the amount of the material dispensed", and it is suggested that this phrase be amended to "an amount of the material dispensed".

15. Claim 30 recites the limitation "the weight of the material released" in line 10.

This is the first recitation of "the weight of the material released", and it is suggested that this phrase be amended to "a weight of the material released", unless this is supposed to be a repetition of "the amount of the material dispensed".

16. Claim 30 recites the limitation "the weight of the material dispensed" in line 2.

This is the first recitation of "the weight of the material dispensed", and it is suggested that this phrase be amended to "a weight of the material dispensed". Please review the various recitations of materials released or dispensed in claim 30 as well.

17. Appropriate correction is required.

Claim Rejections - 35 USC § 102

18. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

19. Claims 1, 6, 22 and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Bouras (US Patent 5,906,682).

Bouras discloses a dispensing system for accurately material on a substrate comprising a dispensing element (items 20 and 22) having a metering device (see column 4, lines 11-21), a positioning system (item 32) coupled to the dispensing element (see column 4, lines 31-60), a calibration device (item 52 and 54) with a dish (item 53) for receiving material from the dispensing element during a calibration routine (described generally throughout columns 5-10, see for example column 9, lines 38-62). Bouras also discloses a controller (items 30 and 34) coupled to the positioning system, the dispensing element and calibration device to control operation the dispensing system wherein the controller is constructed and arranged to control the positioning system and dispensing element. The original movement of the dispensing element during dispensing is considered to be a dispensing velocity profile. Bouras discloses that the variable amount of fluid dispensed during calibration is used to calculated the parameters representing the dispensing parameters, i.e., the dispensing velocity profile, and this dispensing during calibration is a calibration velocity profile which is representative of the dispensing parameters, i.e., the dispensing velocity profile.

Claims 22 and 30 are rejected on similar grounds as claim 1 above. As to claim 22, Bouras discloses means for moving the dispensing element (see column 4, lines 31-44), and means for determining the quantity of adhesive dispensed (item 52 and 54). As to claim 30, Bouras discloses a pump (called a precision positive displacement pump, item 25), a platen (item 53) which is a pre-dispense assembly having a dish that

Art Unit: 1734

receives material dispensed from the pump or syringe, the controller (see rejection of claim 1 above) and the weighing device (items 52 and 54).

As to claim 6, the dish is capable of withstanding certain temperatures, such as room temperature, under which certain materials cure, as well as higher temperatures.

As to claim 33, the apparatus of Bouras is capable of performing the step of comparing the weight of the material dispensed during the calibration routine with a target weight of material to determine an error value.

Claim Rejections - 35 USC § 103

20. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

21. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

22. Claims 2-5, 7 and 31-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bouras as applied to claims 1, 22 and 30 above, and further in view of Lee (US patent 4,836,315).

Bouras discloses a dish (item 53) on a calibration device (items 52 and 54), but is silent as to the properties of the dish. Bouras does not disclose that the dish is removably connected to the calibration device, or that the calibration dish includes a tab, or a protuberance, or is disposable, or that the dish is made of generally conductive material.

As to claims 2-5 and 31-32, Lee discloses a dish (Figure 1, item 19) removably connected to the calibration device, with a tab (visible in Figure 1) and a protuberance (also visible in Figure 1). The dish can be disposed with if desired. One in the art would immediately appreciate that these features allow for ease in disposing or removing the substance in the dish. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized the removable dish with a tab and protuberance in order improve ease in disposing the quantity of liquid.

As to claim 7, Lee discloses that the dish can be made of phenolic resin (column 7, lines 10-17) which appears to meet the definition of generally conductive.

As to claim 33, the apparatus of Bouras, while not disclosing the step of comparing with a target weight, is capable of performing the step of comparing the weight of the material dispensed during the calibration routine with a target weight of material to determine an error value.

23. Claims 8-13, 23-25 and 33-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bouras as applied to claims 1, 6, 22 and 30 above.

As to claims 8, 23, and 33, Bouras does not disclose that the calibration device is constructed and arranged to determine a quantity of material dispensed during a calibration routine, wherein the quantity is compared with a target quantity of material to determine an error value. In claim 22, the means determining a difference and means for adjusting are considered to be calibration devices and its tolerance or error range, and the controller in conjunction with the positioning devices, respectively. Bouras is, considered capable of calibration and comparing as claimed. Bouras merely discloses comparison and calibration (generally in columns 4-10).

However, it would have been obvious to ensure that the calibration device is constructed and arranged to determine a quantity of material dispensed during a calibration routine, wherein the quantity is compared with a target quantity of material to determine an error value. One of ordinary skill in the art would need to know when the amount provided was within the range or tolerance because machines cannot be expected to provide absolute zero tolerance from one dispensing operation to the next, and an error range is necessary to provide the calibration without an undesirable amount of time and cost. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized a tolerance or error limit in order to provide calibration without an undesirable amount of time or cost.

Furthermore, as to claim 9 or 24, Bouras does not disclose that the controller is constructed and arranged to apply a scale factor to the dispensing velocity profile to obtain the calibration velocity profile, such as by reducing the distance travelled, or time of calibration, although Bouras is capable of being programmed to do so. However, one

would appreciate that there is an obvious relationship between the calibration dispensing and substrate dispensing, i.e., calibration velocity profile and dispensing velocity profile. This relationship is a scale factor. Furthermore, one of ordinary skill in the art would appreciate that reducing the dispensing velocity profile by a scale factor would reduce the amount of dispensing material lost, or operating time to the calibration routine, and would be of value when using high precision, expensive materials such as those in the semiconductor industry as disclosed in Bouras. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized a scale factor in the controller, such as a reducing scale factor, in order to reduce the amount of dispensing material lost in calibration routine.

Furthermore, as to claim 10 and 35, while Bouras does not disclose that the system applies the scale factor to the speed of movement of the dispensing system during a calibration routine such that the material dispensed during a calibration routine is substantially the same as that dispensed onto a substrate, Bouras is considered capable of being programmed to do so. However, one would appreciate that there is an obvious relationship between the calibration dispensing and substrate dispensing, i.e., calibration velocity profile and dispensing velocity profile. This relationship is a scale factor. Furthermore, one of ordinary skill in the art would appreciate that reducing the dispensing velocity profile by a scale factor would reduce the amount operating time to the calibration routine, and would be of value when desiring to minimize the downtime of the processing device. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized a scale factor in the controller, such

as a reducing scale factor, in order to reduce the amount downtime in the processing device.

As to claim 25, Bouras discloses the means for determining a quantity includes a weight scale (item 52 and 54).

Furthermore, as to claim 11, while Bouras does not disclose that the system is constructed and arranged to adjust the rate of delivery of the metering device when the error value is greater than a predefined value, Bouras is considered capable of being programmed to do so. Bouras does disclose adjusting the dispensing parameters (column 9, lines 51-62), but not in relation to the error value. However, as cited in the rejection of claims 8, 23, and 33 above, the use of an error value is considered obvious.

Furthermore, as to claim 12 and 34, while Bouras does disclose that the system is constructed to adjust a speed of the movement of the pump, it does not disclose doing so when the error value is greater than a predefined value (see column 9, lines 51-62). However, as cited in the rejection of claims 8, 23, and 33 above, the use of an error value is considered obvious.

Furthermore, as to claim 13 and 36, Bouras does not disclose that the calibration velocity profile is the same as the dispensing velocity profile. However, Bouras is considered capable of performing with a calibration velocity profile that is the same as the dispensing velocity profile. Furthermore, it would have been obvious to use the same velocity profiles for both the calibration and dispensing as one of ordinary skill in the art would appreciate that using the same profile for the calibration would provide the most representative and relevant data as to the dispensing velocity profile, and would

improve calibration accuracy. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized the same velocity profiles in order to improve calibration accuracy.

24. Claims 8, 23 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bouras as applied to claims 1, 6, 22 and 30 above and further in view of Cavallaro (US Patent 5,837,892).

As to claims 8, 23, and 33, Bouras does not disclose that the calibration device is constructed and arranged to determine a quantity of material dispensed during a calibration routine, wherein the quantity is compared with a target quantity of material to determine an error value. Bouras is, however, considered capable of doing so. Bouras merely discloses comparison and calibration (generally in columns 4-10).

Cavallaro discloses that the calibration device is constructed and arranged to determine a quantity of material dispensed during a calibration routine, wherein the quantity is compared with a target quantity of material to determine an error value (see columns 5 and 6). One of ordinary skill in the art would need to know when the amount provided was within the range or tolerance because machines cannot be expected to provide absolute zero tolerance from one dispensing operation to the next, and an error range is necessary to provide the calibration without an undesirable amount of time and cost. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized a tolerance or error limit in order to provide calibration without an undesirable amount of time or cost.

Art Unit: 1734

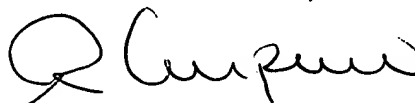
25. Any inquiry concerning this communication or earlier communications from the examiner should be directed to George R. Koch III whose telephone number is (703) 305-3435 (TDD only). If the applicant cannot make a direct TDD-to-TDD call, the applicant can communicate by calling the Federal Relay Service at 1-800-877-8339 and giving the operator the above TDD number. The examiner can normally be reached on M-Th 10-7.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (703) 308-3853. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-7718 for regular communications and (703) 305-3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



George R. Koch III
March 20, 2003



RICHARD CRISPINO
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700